



#10

SEQUENCE LISTING

<110> RheinBiotech Gesellschaft für neue biotechnologische Prozesse
und Produkte mbH

Romano, Ivano

Gellissen, Gerd

DeVergilio, Claudio

<120> Heat-Inducible Promoter

<130> PCT1106-01966

<140> 09/927,811

<141> 2001-08-09

<150> PCT/EP00/01144

<151> 2000-02-11

<160> 27

<170> PatentIn version 3.1

<210> 1

<211> 792

<212> DNA

<213> Hansenula polymorpha

<400> 1

```
cttaaatacc acaataggaa aattatcaat aaagcttttc ggatttcatt acgttatatc      60
gcaaaaaaat agtcgagctt tctgaaccgt tcgttaataa aaaaatagtt ttttcagatt     120
tctatgtgag gcagtcacga tagaattcca tcgaactcgt cagcgccaaa tgtgaatgcg     180
gctttcaaaa gctttgtcga atttgggatg ggaatccatg aatcgaagat gtcaaaatgg     240
gggatcacia aagtacactc acgaggaaaa tcaaaacctt ctctacatt taacacatac     300
ggaaatgatc gatcgatttg agaagattcc tcaatgattt tcgtcatata taggtatctg     360
aggtatttat ggaccgattc gtaataacat catatacatc gcgctttgtc cctgtcccag     420
agatttcgat gaaaaaagcg aattttattc taatatttga agcatgccaa acatggggca     480
gttgatttgt gtgagggtaa aatatcatga attgcacca tcaaatgcag caagatattg     540
accaatccta taatagaaaa cagacttacc acaaatagat tgtgatgacg atattatgaa     600
tctccagatg aaaggctcga aagctatgaa gcctcttgaa acttttcatg gtgagataat     660
attttcgaaa tttccacgaa cttctaaaac gcaattattg aatataaagg aaaaaataata     720
```

tttccatata gcaagcaaat caagctgcac tcctcatcct taaaactaat aaatcttacc 780
catttgatac ca 792

<210> 2
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Consensus sequence for a heat shock element
<220>
<221> misc_feature
<222> (1)..(15)
<223> n may be a,c,t, or g

<400> 2
ngaannnnnnn ngaan 15

<210> 3
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Special embodiment of the heat shock element
<220>
<221> misc_feature
<222> (1)..(15)
<223> n is a, c, t, or g; b is g, c, or t; w is a or t; and m is c or a

<400> 3
ngaannbwmn ngaan 15

<210> 4
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid sequence of a heat shock element

<400> 4
tgaagcctct tgaaa 15

<210> 5
<211> 15
<212> DNA
<213> Artificial Sequence
<220>
<223> Nucleic acid sequence of a heat shock element

<400> 5
tgaatataaa ggaaa 15

<210> 6
 <211> 1903
 <212> DNA
 <213> Hansenula polymorpha

<400> 6
 atgggtcaaag gtaatgttat agtgggtttca aatagaatcc cagtcactat taagaagact 60
 gaagatgatg aaaatggaaa atcaagatac gactatacaa tgtcatcagg cggattagtg 120
 acggcattac aagggtctaa aaatccattt cgatgggttg gatggcctgg gatgtctgtt 180
 gatagcgaac agggacgaca aactgtcgag cgggatttga aggaaaagtt caattgttat 240
 ccgatatggt taagtgacga aattgcagac ttacattata acggcttttag caattctata 300
 ctttggccat tgttccacta tcacccaggg gagatgaatt ttgatgaaat tgcttggggc 360
 gcttattttg aagcaaataa actgttttgc caacgatct taaaggagat aaaagacggg 420
 gacgttatct ggggtacatga ttatcatctc atgttggtgc cttcactgct aagagaccaa 480
 cttaatagta aggggctacc gaatgtcaaa attggctttt tccttcatac tccttttcct 540
 tcaagcgaag tatacaggat acttcctgta aggaaagaaa ttctcgaagg agtgcttagt 600
 tgtgatttga taggtttcca cacctatgat tatgtccgtc actttcttag ttcgggtgaa 660
 agaattattg aattgcgaac gagcccacaa ggtgttgtct ataattgatg acaggtgact 720
 gtaagtgtt atccgattgg cattgacgtt gacaaattct tgaatggtct taagactgat 780
 gaggtcaaaa gcaggataaa acagctggaa accagatttg gtaaagattg taaacttatt 840
 attgggggtg acaggctgga ttacatcaaa ggtgtacctc aaaaactcca cgcgtttgaa 900
 attttcttgg agagacaccc tgagtggatt ggaaaagttg ttttgataga ggtggctgtc 960
 ccctcacgag gggacgttga agaatatcaa tctttgaggg cagctgtaaa tgagctagtg 1020
 ggaagaatca atggttagatt tggtagctgc gaatttggtc ctatccattt ccttcataaa 1080
 agcgtgaact tccaagagct gatattctgc tacgctgcta gtgatgtttg tgtagtgtca 1140
 tcgacacggg acggaatgaa tttggtcagt tatgaataga ttgcttgtca acaagatcga 1200
 aagggtctc tagtactaag tgaatttgcg ggagctgctc agtcattaaa tggcgctctc 1260
 gtagtgaatc catggaatac agaagaactc agtgaagcta tttacgaagg cttgatcatg 1320
 agtgaagaga aaaggagggg caattttcag aagatgttca agtacattga gaaatatact 1380
 gcaagttatt ggggagagaa ctttgtgaaa gaattgacga gagtgtgatt actgtgggtt 1440
 gcagggtta tttgaaatgtt cacttgact tgaagaattt tatattatat acatgttata 1500
 catcaatagg ataaaaatta agtagacaaa gttatcattt tgttgggctg taaaaattga 1560

acgataacaa tatatttgac aaaattaatt tgatctaatt gagctggagg gcgtaatata 1620
 tttggtttcc tgaatcatct tgtagatcac aatatggggc agcttctttc gcagccgatc 1680
 acagagaaac acatcacact tgtccaacat gatcacatat cgcattcaat cggggaaatg 1740
 caaggataca ggttgaccat ggaagacgcg ttctgtgatt tgaacgaaag aatattcgtg 1800
 acggaagagg gacttgacat cagaaaacaa gacgagaata cagagggtga tctggagtct 1860
 cttcaaatta acatttatgg tgtctttgac ggacatggcg gtt 1903

<210> 7

<211> 475

<212> PRT

<213> Hansenula polymorpha

<400> 7

Met	Val	Lys	Gly	Asn	Val	Ile	Val	Val	Ser	Asn	Arg	Ile	Pro	Val	Thr
1				5					10					15	
Ile	Lys	Lys	Thr	Glu	Asp	Asp	Glu	Asn	Gly	Lys	Ser	Arg	Tyr	Asp	Tyr
			20					25					30		
Thr	Met	Ser	Ser	Gly	Gly	Leu	Val	Thr	Ala	Leu	Gln	Gly	Leu	Lys	Asn
		35					40					45			
Pro	Phe	Arg	Trp	Phe	Gly	Trp	Pro	Gly	Met	Ser	Val	Asp	Ser	Glu	Gln
	50					55					60				
Gly	Arg	Gln	Thr	Val	Glu	Arg	Asp	Leu	Lys	Glu	Lys	Phe	Asn	Cys	Tyr
65					70					75				80	
Pro	Ile	Trp	Leu	Ser	Asp	Glu	Ile	Ala	Asp	Leu	His	Tyr	Asn	Gly	Phe
				85					90					95	
Ser	Asn	Ser	Ile	Leu	Trp	Pro	Leu	Phe	His	Tyr	His	Pro	Gly	Glu	Met
			100					105					110		
Asn	Phe	Asp	Glu	Ile	Ala	Trp	Ala	Ala	Tyr	Leu	Glu	Ala	Asn	Lys	Leu
	115						120					125			
Phe	Cys	Gln	Thr	Ile	Leu	Lys	Glu	Ile	Lys	Asp	Gly	Asp	Val	Ile	Trp
	130					135					140				
Val	His	Asp	Tyr	His	Leu	Met	Leu	Leu	Pro	Ser	Leu	Leu	Arg	Asp	Gln
145					150					155				160	
Leu	Asn	Ser	Lys	Gly	Leu	Pro	Asn	Val	Lys	Ile	Gly	Phe	Phe	Leu	His
				165					170					175	
Thr	Pro	Phe	Pro	Ser	Ser	Glu	Ile	Tyr	Arg	Ile	Leu	Pro	Val	Arg	Lys
			180					185					190		
Glu	Ile	Leu	Glu	Gly	Val	Leu	Ser	Cys	Asp	Leu	Ile	Gly	Phe	His	Thr
	195						200					205			

Tyr Asp Tyr Val Arg His Phe Leu Ser Ser Val Glu Arg Ile Leu Lys
 210 215 220
 Leu Arg Thr Ser Pro Gln Gly Val Val Tyr Asn Asp Arg Gln Val Thr
 225 230 235 240
 Val Ser Ala Tyr Pro Ile Gly Ile Asp Val Asp Lys Phe Leu Asn Gly
 245 250 255
 Leu Lys Thr Asp Glu Val Lys Ser Arg Ile Lys Gln Leu Glu Thr Arg
 260 265 270
 Phe Gly Lys Asp Cys Lys Leu Ile Ile Gly Val Asp Arg Leu Asp Tyr
 275 280 285
 Ile Lys Gly Val Pro Gln Lys Leu His Ala Phe Glu Ile Phe Leu Glu
 290 295 300
 Arg His Pro Glu Trp Ile Gly Lys Val Val Leu Ile Gln Val Ala Val
 305 310 315 320
 Pro Ser Arg Gly Asp Val Glu Glu Tyr Gln Ser Leu Arg Ala Ala Val
 325 330 335
 Asn Glu Leu Val Gly Arg Ile Asn Gly Arg Phe Gly Thr Val Glu Phe
 340 345 350
 Val Pro Ile His Phe Leu His Lys Ser Val Asn Phe Gln Glu Leu Ile
 355 360 365
 Ser Val Tyr Ala Ala Ser Asp Val Cys Val Val Ser Ser Thr Arg Asp
 370 375 380
 Gly Met Asn Leu Val Ser Tyr Glu Tyr Ile Ala Cys Gln Gln Asp Arg
 385 390 395 400
 Lys Gly Ser Leu Val Leu Ser Glu Phe Ala Gly Ala Ala Gln Ser Leu
 405 410 415
 Asn Gly Ala Leu Val Val Asn Pro Trp Asn Thr Glu Glu Leu Ser Glu
 420 425 430
 Ala Ile Tyr Glu Gly Leu Ile Met Ser Glu Glu Lys Arg Arg Gly Asn
 435 440 445
 Phe Gln Lys Met Phe Lys Tyr Ile Glu Lys Tyr Thr Ala Ser Tyr Trp
 450 455 460
 Gly Glu Asn Phe Val Lys Glu Leu Thr Arg Val
 465 470 475

<210> 8
 <211> 2695
 <212> DNA
 <213> Hansenula polymorpha

<400> 8

cttaaataacc	acaataggaa	aattatcaat	aaagcttttc	ggatttcatt	acgttatatc	60
gcaaaaaaat	agtcgagctt	tctgaaccgt	tcgttaataa	aaaaatagtt	ttttcagatt	120
tctatgtgag	gcagtcacga	tagaattcca	tcgaactcgt	cagcgccaaa	tgtgaatgcg	180
gctttcaaaa	gctttgtcga	atttgggatg	ggaatccatg	aatcgaagat	gtcaaaatgg	240
gggatcacaa	aagtacactc	acgaggaaaa	tcaaaacctt	ctcgtacctt	taacacatac	300
ggaaatgata	gatcgatttg	agaagattcc	tcaatgattt	tcgtcatata	taggtatctg	360
aggatatttat	ggaccgattc	gtaataacat	catatacatc	gcgctttgtc	cctgtcccag	420
agatttcgat	gaaaaaagcg	aattttattc	taatatttga	agcatgccaa	acatggggca	480
gttgatttgt	gtgagggtaa	aatatcatga	attgcacca	tcaaatgcag	caagatattg	540
accaatccta	taatagaaaa	cagacttacc	acaaatagat	tgtgatgacg	atattatgaa	600
tctccagatg	aaaggctcga	aagctatgaa	gcctcttgaa	acttttcatg	gtgagataat	660
attttcgaaa	tttccacgaa	cttctaaaac	gcaattattg	aatataaagg	aaaaataata	720
tttccatata	gcaagcaa	caagctgcac	tcctcatcct	taaaactaat	aaatcttacc	780
catttgatac	caatgggtcaa	aggtaatggt	atagtgggtt	caaatagaat	cccagtcact	840
attaagaaga	ctgaagatga	tgaaaatgga	aatcaagat	acgactatac	aatgtcatca	900
ggcggattag	tgacggcatt	acaagggctc	aaaaatccat	ttcgatgggt	tggatggcct	960
gggatgtctg	ttgatagcga	acagggacga	caaactgtcg	agcgggattt	gaaggaaaag	1020
ttcaattggt	atccgatatg	gttaagtgc	gaaattgcag	acttacatta	taacggcttt	1080
agcaattcta	tactttggcc	attgttccac	tatcaccacg	gggagatgaa	ttttgatgaa	1140
attgcttggg	ccgcttattt	ggaagcaa	aaactgtttt	gccaaacgat	cttaaaggag	1200
ataaaagacg	gggacgttat	ctgggtacat	gattatcatc	tcattgttgt	gccttcactg	1260
ctaagagacc	aacttaatag	taaggggcta	ccgaatgtca	aaattggcct	tttccttcat	1320
actccttttc	cttcaagcga	aatatacagg	atacttcctg	taaggaaaga	aattctcgaa	1380
ggagtgccta	gttgtgattt	gataggtttc	cacacctatg	attatgtccg	tcactttctt	1440
agttcggttg	aaagaatatt	gaaattgcga	acgagcccac	aagggtgtgt	ctataatgat	1500
agacaggtga	ctgtaagtgc	ttatccgatt	ggcattgacg	ttgacaaatt	cttgaatggg	1560
cttaagactg	atgaggtcaa	aagcaggata	aaacagctgg	aaaccagatt	tggtaaagat	1620
tgtaaactta	ttattggggg	ggacaggctg	gattacatca	aagggtgtacc	tcaaaaactc	1680

cacgcgtttg aaattttctt ggagagacac cctgagtgga ttggaaaagt tgttttgata 1740
 caggtggctg tcccctcacg aggggacgtt gaagaatata aatctttgag ggcagctgta 1800
 aatgagctag tgggaagaat caatggtaga tttggtaccg tcgaatttgt tcctatccat 1860
 ttccttcata aaagcgtgaa cttccaagag ctgatatactg tctacgctgc tagtgatggt 1920
 tgtgtagtgt catcgacacg ggacggaatg aatttgggtca gttatgaata cattgcttgt 1980
 caacaagatc gaaagggatc tctagtacta agtgaatttg cgggagctgc tcagtcatta 2040
 aatggcgctc tcgtagtgaa tccatggaat acagaagaac tcagtgaagc tatttacgaa 2100
 ggcttgatca tgagtgaaga gaaaaggagg ggcaattttc agaagatggt caagtacatt 2160
 gagaaatata ctgcaagtta ttggggagag aactttgtga aagaattgac gagagtgtga 2220
 ttactgtggt ttgcagggtta atttgaaatg ttcacttgta cttgaagaat tttatattat 2280
 atacatgtta tacatcaata ggataaaaat taagtagaca aagttatcat tttgttgggc 2340
 tgtaaaaatt gaacgataac aatatatttg acaaaattaa tttgatctaa ttgagctgga 2400
 gggcgtaata tatttggttt cctgaatcat cttgtagatc acaatatggg gcagcttctt 2460
 tcgcagccga tcacagagaa acacatcaca cttgtccaac atgatcacat atcgcatcca 2520
 atcggggaaa tgcaaggata caggttgacc atggaagacg cgttctgtga tttgaacgaa 2580
 agaatatctg tgacggaaga gggacttgac atcagaaaac aagacgagaa tacagagggt 2640
 gatctggagt ctcttcaaata taacatttat ggtgtctttg acggacatgg cggtt 2695

<210> 9
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer F1 (forward)
 <220>
 <221> misc_feature
 <222> (1)..(26)
 <223> n is a, c, t, or g; v is a, c, or g; y is c or t;
 <220>
 <221> misc_feature
 <222> (1)..(26)
 <223> n is a, c, t, or g; v is a, c, or g; y is c or t;

<400> 9
 tggccvytn tccaytacca tccygg 26

<210> 10
 <211> 24

<212> DNA
 <213> Artificial Sequence
 <220>
 <223> PCR primer R1 (backward)
 <220>
 <221> misc_feature
 <222> (1)..(24)
 <223> r is a or g; b is c, g, or t; y is c or t, h is a, c, or t

 <400> 10
 ggcertgbaay ttytghggha cacc 24

 <210> 11
 <211> 23
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing Primer F3 (forward)

 <400> 11
 ggaagcaa at aaactgtttt gcc 23

 <210> 12
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F4 (forward)
 <400> 12
 ctgtaagtgc ttatccgatt ggc 23

 <210> 13
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F6 (forward)
 <400> 13
 ggacgacaaa ctgtcgagcg gg 22

 <210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing primer F7 (forward)

 <400> 14
 catactcctt ttccttcaag cg 22

 <210> 15
 <211> 21
 <212> DNA

<213> Artificial Sequence

 <220>
 <223> Sequencing primer F8 (forward)

 <400> 15
 aaagcgtgaa cttccaagag c 21

 <210> 16
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F9 (forward)

 <400> 16
 gcgtgtgatt actgtggttt gc 22

 <210> 17
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F10 (forward)
 <400> 17
 ggtgagataa tattttcgaa atttcc 26

 <210> 18
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F11 (forward)
 <400> 18
 cccatcaaat gcagcaagat attgacc 27

 <210> 19
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Sequencing primer F3 (backward)

 <400> 19
 ccattcaaga atttgtcaac g 21

 <210> 20
 <211> 23
 <212> DNA

<213> Artificial Sequence
 <220>
 <223> Sequencing primer R4 (backward)
 <400> 20
 catgagatga taatcatgta ccc 23
 <210> 21
 <211> 23
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing Primer R5 (backward)
 <400> 21
 caattttgac attcggtagc ccc 23
 <210> 22
 <211> 22
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing primer R6 (backward)
 <400> 22
 gtaatgccgt cactaatccg cc 22
 <210> 23
 <211> 23
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing primer R7 (backward)
 <400> 23
 gaacatcttc tgaaaattgc ccc 23
 <210> 24
 <211> 21
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Sequencing primer R8 (backward)
 <400> 24
 ctagctcatt tacagctgcc c 21
 <210> 25
 <211> 25
 <212> DNA

<213> Artificial Sequence

<220>

<223> Sequencing primer R9 (backward)

<400> 25

catagctttc gagcctttca tctgg

25

<210> 26

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequencing primer Plasm. F (forward)

<400> 26

ggcgagcccg atcttcccca tcgg

24

<210> 27

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequencing primer Plasm. R (backward)

<400> 27

ctgctcgctt cgctacttgg agccac

26

<210> 28

<211> 15

<212> DNA

<213> Saccharomyces cerevisiae

<220>

<223> Heat shock element

<400> 28

ggaacagaac aatcg

15